Issue 10
October 2017

Utah Valley Amateur Radio Club

The UVARC Shack

Enter the new club leadership

Thanks to everybody for your vote of confidence. Please understand that none of us in the club leadership are (completely) delusional, however: we do realize you probably re-elected us only because you don't want to lead the club yourself, and we get that. But for now that's actually a good thing, because we have a lot of plans on our proverbial plates that can't be disclosed just yet, mostly to prevent unrealistic expectations (think under-promise and over-deliver), and we're trying to make progress on them.

As you know, for the next three months we'll be taking in-kind (non-perishable food and goods) donations for the *Utah Food and Care Coalition* and ask that monetary donations be made directly to them.

Thanks to all of you who have donated to get us a new repeater battery. Many thanks to Richard and Keith for installing it, and our 1.25-meter repeater, on the mountaintop, and so much more.

Many new hams have joined our ranks this summer. We welcome you with open airwaves, and invite you to share the fun and camaraderie in our journey forward!

This month in the *UVARC Shack*

Congratulations to our newly elected club presidency! How did the solar eclipse affect ham radio? A DIY for the serious DXer and contester; an updated band allocation chart; plus a discussion that answers the question about how far an HT can reach.

Dear Annette answers a question about how many radios a ham should have.

Please send your ideas, stories, updates, photos, questions, gripes, and breaking news to ***uvarcshack@gmail.com***

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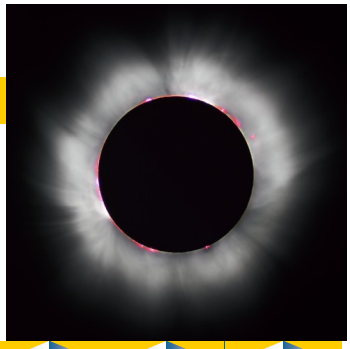
Solar Eclipse

You asked for it



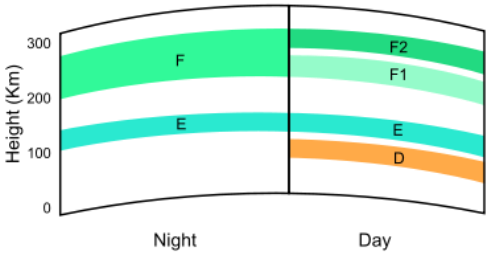
How did the solar eclipse affect radio propagation?

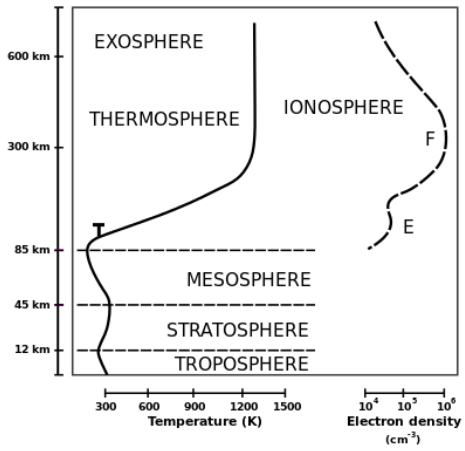
The ARRL has said that an official report will be forthcoming, compiling data from many sources and locations and circumstances regarding the effect the total solar eclipse of 2017 had on amateur radio propagation. Many locals have reported little or no change monitoring beacons, local communication, and distant signals, while many others have said that they experienced a momentary enhancement of band conditions during data and phone contacts. The ARRL verbally released (ARRL News) their initial findings, which showed that the eclipse had little effect on radio propagation higher than 40 meters, and a moderate effect on very low frequencies.

And yet these seemingly conflicting reports are consistent with facts surrounding how propagation is affected by the ionospheric D-layer, if location is also taken into account. The different layers of the atmosphere really don't come and go with daylight or darkness, but they become ionized and de-ionized differently depending on sunlight. In short, the D-layer seems to be *active* during daytime because solar radiation interacts with air molecules in such a way that the net ionized density is very low compared with the same air at night, and so absorbs HF radio waves during the day. A total solar eclipse, therefore, should cause the D-layer to deactivate during the time and location of totality, making it appear as though the inactive portion of the D-layer is *moving* with the moon's shadow.

The Black Hole

The reason the various results seem inconsistent, however, is because of where the *moving hole* of low-density D-layer exists in relation to where one is listening to a beacon, for example. If the *moving hole* happened to be directly overhead, the beacon's signal might have been absorbed by the ionosphere like usual during the daytime, because the beacon signal is emitted at an angle from the distant transmitter, just missing the hole and getting absorbed by the D-layer, preventing you from hearing the beacon. If the hole happened to be between you and a contact, you might have been able to hear the beacon very strongly for a little while.





Solar Eclipse

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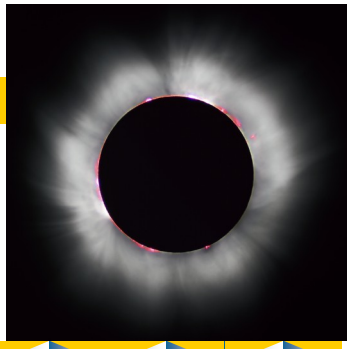


But the un-scientific data is also consistent with the conclusions reached by researchers during the total solar eclipse of 1999, during which numerous scientific and common-folk propagation measurements were compiled. The following graph (sorry for the grainy copy-of-a-copy) illustrates the net effect of the eclipse on CW transmission on 1440 kHz, which is one of the most dramatic results:

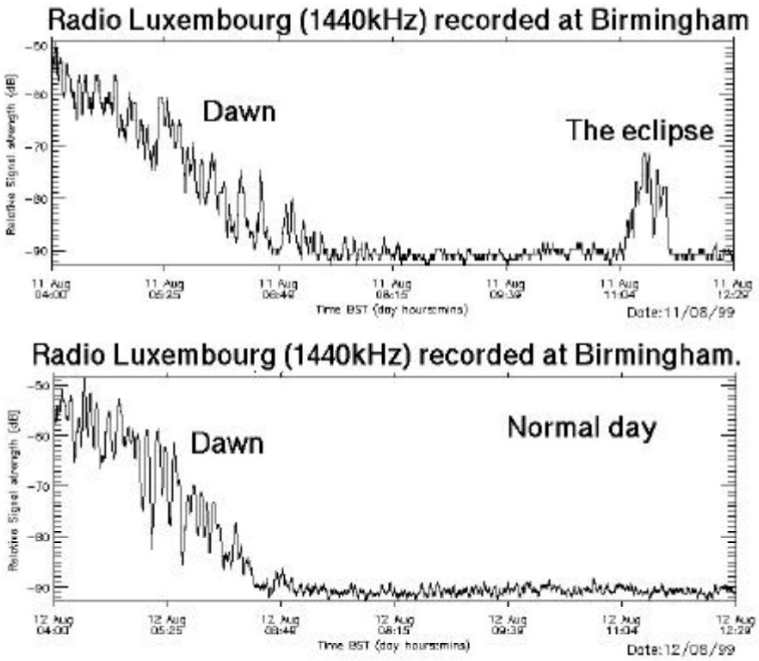


Figure 19. A plot of the variation in the received CW radio signal as recorded in Birmingham RA Regional Office in the UK of the 1440kHz (±1.4kHz) carrier emanating from Radio Luxembourg at Marnach (a) for the morning of the total solar eclipse and (b) the day after the eclipse.

(Source: https://arxiv.org/pdf/1703.01491.pdf)

Please stand by

As we await the official reports from ARRL and other entities, we only have ear-witnesses and their experiences to rely on. And what we hear is that the total solar eclipse did indeed affect HF amateur radio propagation. And still, consistent with science, that depended a lot on frequency and location.

(ARRL Source: http://www.arrl.org/news/more-professional-and-citizen-research-suggests-eclipse-briefly-affected-hf-propagation)

(HamSci / TAPR source: http://www.arrl.org/news/hamsci-presents-initial-eclipse-results-at-arrl-tapr-digital-communications-conference)

Brass Tacks

An in-depth look at a radio-related topic

How far can my little radio transmit?

Let's say you paid Dempsey (NMØAB) a visit at his work place, Doug Smith Chrysler-Dodge-Jeep-Ram, pointed to a nice-looking vehicle, and asked, ***So, just how far will this vehicle take me?*** He might just give you a blank stare, while trying to decipher what you're really trying to ask. ***You mean on a tank of gas?*** he asks. ***No***, you say, ***how far, period.*** Our dealer friend, still unsure of your intention, might start by saying something like ***It depends*** and begin explaining concepts like fuel economy, engine size, terrain, and driving habits. Ok, in all fairness to Dempsey, that's not a perfect analogy, but to knowledgeable radio operators like him, explaining how far a little radio will reach can seem just as frustrating.

Believe it or not, I get asked that question quite a lot, yet as new hams, people honestly want to know how far apart two hams on HTs (handheld transceivers) can be, and still hear each other well enough to carry on a conversation.

They've seen the deceptive ads and labels at Costco on the walkie-talkie packages that shout ***10 Miles!*** and ***25 Miles!*** and even ***35 MILES!*** and come to you, wanting to compare apples with apples. But before they go on a spending spree, they want to be sure they're getting their money's worth. And if you respond with something related to ***line-of-sight***, it might get them off your back for awhile, but that's not entirely accurate or satisfying, and they'll soon return with more questions.

How far can my rock transmit?

One of the first puzzles that a new ham runs into with a little HT is the fact that he and his ham friend can talk on them in town up to a mile, maybe two if they're lucky, yet both can easily reach the repeater over 13 miles away. Why is that?

Radio waves act kind of like the waves on a still water surface. If you toss a rock into a calm pond, you can see the waves ripple outward from the point of impact. You'll also notice that the farther out the waves travel, the smaller the waves seem, even though their rate of travel (frequency) remains the same. Now, extend that pond to a hundred yards, and you'll see the waves become even smaller on the opposite side. A mile, and the ripples seem almost non-existent, yet they're still there.

The three big factors

Three primary factors are in control of just how far apart you and your contact can be for an intelligible conversation to take place. These include transmit ***power*** (how big the rock is), receiver ***sensitivity*** (how well your eyes can detect the pond ripples), and ***obstructions*** (island, boat, cattails, etc.) There are other factors (scattering, reflection, refraction, ducting, knife-edging, constructive / destructive interference, etc.) that might help or hinder your radio signal, but discussing them won't do much to help answer our question, which is regarding HTs.

Brass Tacks

continued

Power

Shine your flashlight through a pane of glass, and the light will seem to pass through as though the glass was absent. Now multiply the glass by ten panes, twenty panes, thirty panes. It'll become quite apparent (no pun intended) that your once-see-through glass no longer seems so transparent. Now, if you used a higher-power flashlight, you might be able to detect more of the light coming through all those panes.

So, will more power from your little radio help? Possibly, but to a point. Your HT can only put out so much wattage; furthermore, there are the other two major factors that might contribute to the helpfulness or hindrance of your signal. If the light from your flashlight finds it difficult to punch through a thin cardboard box, you can increase your light intensity by double, triple, or even ten-fold, but still might find that most of the light has difficulty getting out of the box.

Sensitivity

Assuming your transmitter is throwing out enough power to reach your friend's location with some amount of usable signal, and even if you and your friend can see each other clearly, his receiver still need to be sensitive enough to detect and process (demodulate) your signal and turn it into intelligible audio. One of the biggest differences between a walkie-talkie that boasts a 25-mile limit over one that claims a 10-mile limit, for example, is its improved sensitivity. The manufacturer assertions are made based on ideal conditions using the same model of radio on both ends of the conversation.

Fortunately, modern transceivers are designed with very clever electrical circuitry and constructed using very high quality factory processes. Unfortunately, there's not a lot remaining for us, the user, to improve the sensitivity of our receivers. However, one important thing we can do to improve our reception is focus on our antennas, which is why the great majority of our DIY space concentrates on building antennas. To create the optimum receive experience, you need to have an optimum antenna, one that has low loss and high receive ability for the frequencies you expect to receive, and typically a half-wave antenna will work much better than a quarter-wave antenna.

Obstructions

When we refer to "line-of-sight" we're talking about radio line-of-sight, not necessarily human-eye line-of-sight. For example, a radio transmitting from behind a leafy bush will not be hampered much by the opaqueness of the leaves, even though it's clearly (no pun intended) not within sight of any receiver. So, reaching the distant repeater is not a problem, because not much stands between you and it.

A cumulative effect occurs with seemingly radio-transparent objects, such as leaves and house walls. Because the repeater is (typically) up at an angle from your location, there are few obstructions between the repeater and your HT. But because there are many obstructions (trees, vehicles, buildings, small hills, greater air mass / moisture) between you and your ham friend, your signals will be reduced (attenuated) by quite a lot compared with that between you and the repeater.

The farther away you want more of your signal to be detected, the fewer obstructions you can

Brass Tacks

continued

afford to leave in your way. That means you should ***locate your HT*** with the reasonably fewest obstructions between your radio and your friend's radio, so your locations become very important to the success of your communication.

An abbreviated table

This very brief and generalized table can provide a rough summary of the range of your handheld radio under perhaps the most common conditions that affect VHF / UHF (FM) communication by HT. So, ***Distance*** in this table refers to the maximum distance between your HT and the other person you're trying to talk with.

How	Location	Distance	Explanation / Dependencies
HT to HT	Vehicle to inside vehicle	Under ½ mile	Your vehicles are metal shields
HT to HT	Within your city	1 to 3 miles	Buildings, trees, other obstructions
HT to HT	Suburbs	3 to 6 miles	Depends on the amount of tree leaves
HT to HT	Flat desert or over water	6 to 12 miles	Line of sight
HT to HT	Mountaintop to valley floor	15 to 20 miles	Mountain height vs. terrain topology
HT to HT	Mountaintop to mountaintop	30 to 35 miles	Mountain heights
HT through a repeater	Standalone repeater	30 to 100 miles	Using the repeater's range
HT through a repeater	Repeater on the internet	Unlimited	The internet's the limit
HT through a satellite	Clear path to the satellite	Nearly halfway	Satellite angle above your horizon
HT to ISS	Clear path to the ISS	Hundreds of miles	ISS angle above your horizon

* some of this material unapologetically stolen from Miklor

Why you need to know

It's a simple question, but the answer is anything but. If you're new to ham radio, our purpose here is to give you some idea of how far your handheld radio can reach under a variety of circumstances. And if you're a long-time ham veteran, our purpose is to give you a little ammunition to help you answer that question by newer hams who just want to know.

So, how far can one of these little HTs reach? Depends.

— Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

Dear Annette

What's on your mind? Serious, humorous, technical, and thoughtful answers to your deepest, (mostly) ham-related questions.

Dear Annette:

I have a comment, rather than a question. In your May 2017 column, you mentioned some advantages to upgrading your license, and I just experienced another and thought I'd share. As a Tech, I didn't feel the need to expand any of my ham radio skills or to really learn anything new, and was always leaning on others to lead the way. Then a friend challenged me to upgrade to General, and thanks to *HamStudy* I passed with flying colors the first time. Now, I feel emotionally obligated to know more, so that I could be of more help to others. And I also tend to hold myself more accountable for mistakes, and so I'm a little more careful when I make statements on the air. So, it seems to me that good reasons to upgrade include stretching your inclination for service, and becoming more responsible.

Educated in Eagle Mountain

Dear Educated:

Congratulations on your upgrade to General, and thanks for that added insight!

Dear Annette:

Would you mind sharing what got you into ham radio?

Wonder in Springville

Dear Wonder:

If you've ever seen the movie *Contact*, the opening scene with the man showing his little girl the ham radio ropes exactly describes how I got started. My father would have me log his contacts, mark them on a wall map, and send out his QSL cards. Anything to spend some time with him. But by the time he passed away the hobby grew on me, and I was in too deep to quit. And all the attention I got on the air was just a bit addicting.

Dear Annette:

How many radios does a person need? And which do you recommend?

Curious in Layton

Dear Curious:

Wow...what a couple of loaded questions! The plain and simple answer to the first question is At least one, but I realize that's not what you're after. Your radio needs are going to depend on your purposes of doing ham radio. These might include preparedness, the hobby, contesting, or just keeping up with the Pockruses. But rather than go through every possibility, I'll just share what I believe every ham who's serious about the craft should have. Each should purchase a reliable dual-band HT, a second HT that has a removable alkaline sled and is stowed away in a go-kit, a mobile rig installed in the vehicle, and a portable HF rig in the shack. For these I recommend the Baofeng UV-5X3 as your reliable HT, the Yaesu FT-60R as your go-kit HT, the Kenwood TM-V71A for your vehicle, and the Yaesu FT-857D for a portable HF rig. But that's just me. Try asking others at our next club meeting!

Dear Annette:

How come we never hear you on the radio?

Air-hog in Draper

Dear Air-hog:

You don't know that.

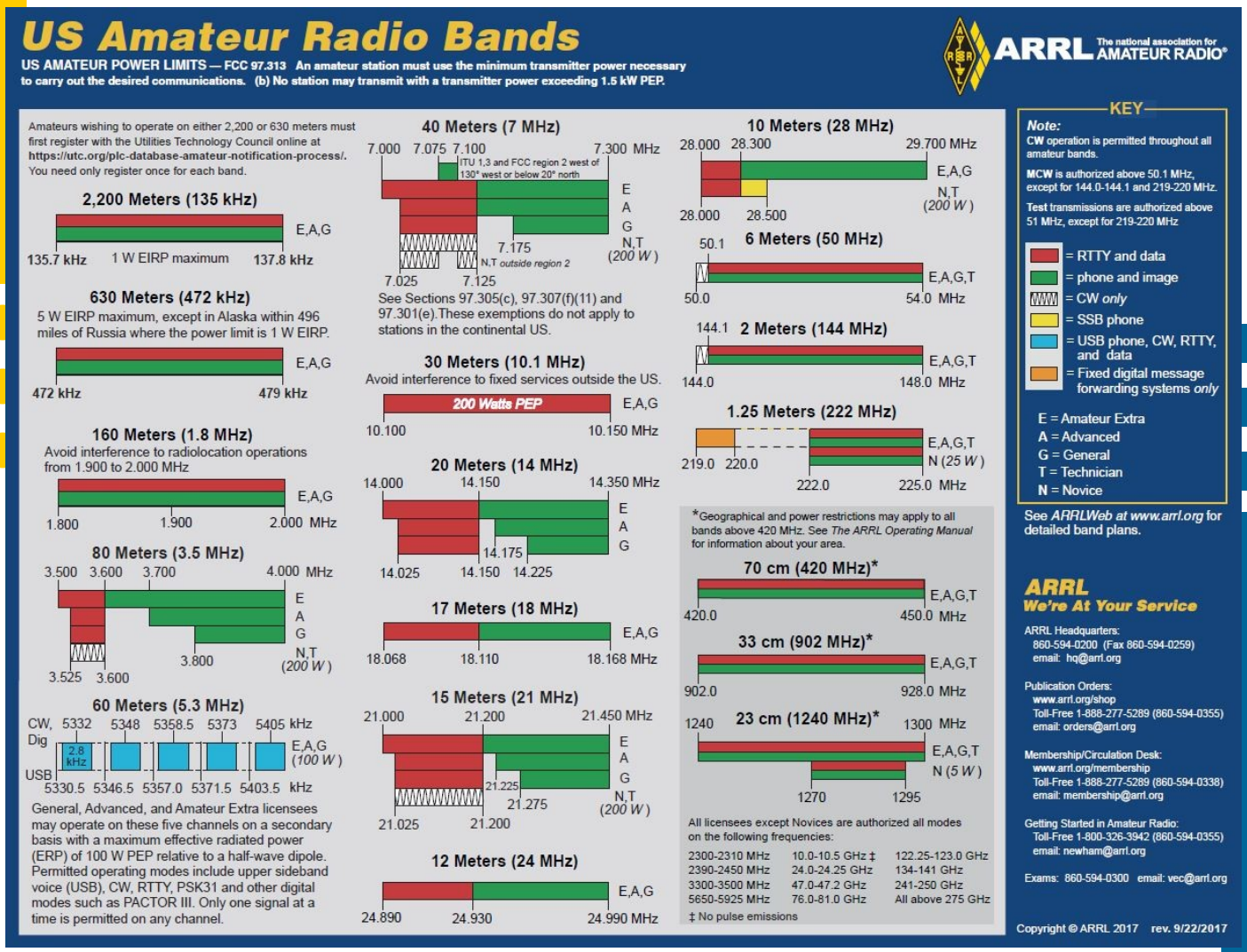
Got a question for Dear Annette? Send your email to ***uvarcshack@gmail.com*** *and include your town.*

ARRL News

The latest from the Mother Ship

ARRL releases its updated band allocation chart

As you can see from the recently released graphical band allocation chart, there is little change from the 2012 chart, that actually affects the average radio amateur.


US Amateur Radio Bands
US AMATEUR POWER LIMITS — FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.
ARRL The national association for AMATEUR RADIO
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at https://utc.org/plc-database-amateur-notification-process/. You need only register once for each band.
2,200 Meters (135 kHz)
E,A,G
135.7 kHz
1 W EIRP maximum
137.8 kHz
630 Meters (472 kHz)
5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.
E,A,G
472 kHz
479 kHz
160 Meters (1.8 MHz)
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz
E,A,G
1.800
1.900
2.000 MHz
80 Meters (3.5 MHz)
3.500 3.600 3.700 4.000 MHz
E
A
G
N,T
(200 W)
3.525 3.600
3.800
60 Meters (5.3 MHz)
CW, Dig 5332 5348 5358.5 5373 5405 kHz
2.8 kHz
E,A,G (100 W)
USB 5330.5 5346.5 5357.0 5371.5 5403.5 kHz
General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.
40 Meters (7 MHz)
7.000 7.075 7.100 7.300 MHz
ITU 1,3 and FCC region 2 west of 130° west or below 20° north
E
A
G
N,T
(200 W)
7.175
N,T outside region 2
7.025
7.125
See Sections 97.305(c), 97.307(f)(11) and 97.301(e).These exemptions do not apply to stations in the continental US.
30 Meters (10.1 MHz)
Avoid interference to fixed services outside the US.
200 Watts PEP
E,A,G
10.100
10.150 MHz
20 Meters (14 MHz)
14.000 14.150 14.350 MHz
E
A
G
14.175
14.025 14.150 14.225
17 Meters (18 MHz)
E,A,G
18.068 18.110 18.168 MHz
15 Meters (21 MHz)
21.000 21.200 21.450 MHz
E
A
G
N,T
(200 W)
21.225
21.275
21.025 21.200
12 Meters (24 MHz)
E,A,G
24.890 24.930 24.990 MHz
10 Meters (28 MHz)
28.000 28.300 29.700 MHz
E,A,G
N,T
(200 W)
28.000 28.500
6 Meters (50 MHz)
50.1
E,A,G,T
50.0 54.0 MHz
2 Meters (144 MHz)
144.1
E,A,G,T
144.0 148.0 MHz
1.25 Meters (222 MHz)
E,A,G,T
N (25 W)
219.0 220.0 222.0 225.0 MHz
*Geographical and power restrictions may apply to all bands above 420 MHz. See The ARRL Operating Manual for information about your area.
70 cm (420 MHz)*
E,A,G,T
420.0 450.0 MHz
33 cm (902 MHz)*
E,A,G,T
902.0 928.0 MHz
1240 23 cm (1240 MHz)* 1300 MHz
E,A,G,T
N (5 W)
1270 1295
All licensees except Novices are authorized all modes on the following frequencies:
2300-2310 MHz 10.0-10.5 GHz ‡ 122.25-123.0 GHz
2390-2450 MHz 24.0-24.25 GHz 134-141 GHz
3300-3500 MHz 47.0-47.2 GHz 241-250 GHz
5650-5925 MHz 76.0-81.0 GHz All above 275 GHz
‡ No pulse emissions
KEY
Note:
CW operation is permitted throughout all amateur bands.
MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.
Test transmissions are authorized above 51 MHz, except for 219-220 MHz
= RTTY and data
= phone and image
= CW only
= SSB phone
= USB phone, CW, RTTY, and data
= Fixed digital message forwarding systems only
E = Amateur Extra
A = Advanced
G = General
T = Technician
N = Novice
See ARRLWeb at www.arrl.org for detailed band plans.
ARRL
We're At Your Service
ARRL Headquarters:
860-594-0200 (Fax 860-594-0259)
email: hq@arrl.org
Publication Orders:
www.arrl.org/shop
Toll-Free 1-888-277-5289 (860-594-0355)
email: orders@arrl.org
Membership/Circulation Desk:
www.arrl.org/membership
Toll-Free 1-888-277-5289 (860-594-0338)
email: membership@arrl.org
Getting Started in Amateur Radio:
Toll-Free 1-800-326-3942 (860-594-0355)
email: newham@arrl.org
Exams: 860-594-0300 email: vec@arrl.org
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The new chart includes the newly adopted 2200-meter and 630-meter bands. Like many of us do, it's a good idea to print this chart and tape it to your wall near your rig. The direct link to the ARRL page that presents the chart is http://www.arrl.org/graphical-frequency-allocations

Hot Tips

Good info for the new ham, and old stuff to refresh your memory

Exam question T1AØ6

The following question is in the current Technician question pool:

Which of the following services are protected from interference by amateur signals under all circumstances?

A. **Citizens Radio Service**
B. **Broadcast Service**
C. **Land Mobile Radio Service**
D. **Radionavigation Service**

The correct answer is "D". Whatever is going on, if you interfere in any way with a navigation system you must stop transmitting immediately, even if the interference is not your fault. Navigation systems are very critical, since malfunctions, whatever the reason may be, can lead to death or injury. There have been several articles in the press, Amateur Radio, and mainstream, about people interfering with and getting fines and even jail time for purposely jamming GPS. Here's an interesting article about devices that can be purchased for jamming GPS and what may be the consequences if you buy and use one:

http://gizmodo.com/jamming-gps-signals-is-illegal-dangerous-cheap-and-e-1796778955

— Steve Whitehead, NV7V

FRS / GMRS

The FCC has authorized the non-licensed FRS service (Part 95.561) for 2 watts on many of the channels that were previously limited to 500 mW.

Check out http://noji.com/hamradio/pdf-ppt/FRS-GMRS-Frequencies.pdf for an abbreviated chart.

The reason we mention this is to help you remember that, while some ham radios are capable of transmitting on FRS frequencies, not all of them are **certificated** (formerly *type-accepted*) for Part 95 use. Be sure to look up the certifications for your particular radio before attempting to use it on FRS channels. Just so you'll know, there are several Chinese ham radios that have been submitted for FCC testing intended for Part 95 certification. But until they are actually certificated, we plan to abide by the rules.

See the FCC text about FRS on https://www.fcc.gov/wireless/bureau-divisions/mobility-division/family-radio-service-frs

See the applicable FCC rule on https://www.ecfr.gov/cgi-bin/text-idx?SID=389ed06497e941c08d6d319b15e17c59&mc=true&node=pt47.5.95&rgn=div5#se47.5.95_1561

Eddy-kit

Radio etiquette reminders

Previously we've mentioned a few things you ***should do*** on the air. This time, we list a few things ***you don't have to do***. You're not violating any rules if you insist on these outdated habits, but they might make others who are listening smile or roll their eyes.

No need to say anybody's call sign but your own

No need to give your call sign on every (or every other) transmission

No need to say ***for ID***

No need to say ***over*** on a repeater (but probably should if your transmission is noisy)

No need to say ***in the group***

No need to say ***break*** to jump into an ongoing conversation (just say your call sign)

No need to say ***break*** (or anything) after a pause in your paragraph

No need to say ***clear*** at the end of your communication (just say your call sign)

DIY

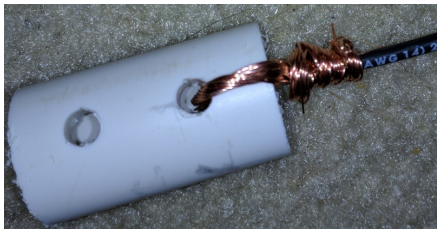
Worthwhile projects you can build on your own

4-band Fan Dipole Antenna

For a no-nonsense HF antenna that's proven itself on Field Day, semi-portable SOTA operation, and a number of contests, this design is an adaptation of the one created by W6HDG. It's resonant on 80, 40, 20, and 10 meters, but does require at least 25 feet of height.

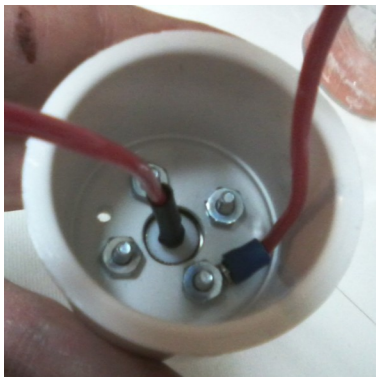
Here's the parts list:

- √ 261 feet stranded 14 AWG insulated wire
- √ One 24″ PVC 1-1/4″ diameter tube
- √ Two PVC 1-1/4″ slip caps
- √ One SO-239 flanged bulkhead connector
- √ Ten #8 ring terminals for 14 AWG wire
- √ One #6 ring terminal for 14 AWG wire
- √ Four #6 3/4″ flat head machine screws
- √ Four #6 nuts and split washers
- √ One 2″ x 1/4″ eyebolt and nut
- √ Four 1-1/2″ x 3/16″ eyebolts and nuts
- √ Five 1/4″ split washers
- √ Five 1/4″ flat washers
- √ Four 15″ zip-ties
- √ One package 4″ zip-ties
- √ 200 feet black paracord
- √ Two dogbone insulators



Either purchase two dogbone insulators, or cut two 2″ sections from a piece of 1/2″ or 3/4″ PVC and drill two 1/4″ holes near one end and two near the other end of each PVC section.

Attach one of the 1/4″ eyebolts to the center of one of the slip caps, which forms the top of the center assembly. Cut two 6″ pieces of the 14 AWG wire, and crimp or solder a #8 ring terminal to each. Solder one of the 6″ 14 AWG wires to the center conductor of the SO-239 bulkhead. Crimp or solder a #6 ring terminal to the end of the other wire. Drill a 1/2″ hole in the center of the other slip cap, and attach the SO-239 bulkhead to its outside, pulling the center conductor wire through. Drill four #6 holes to match the four bulkhead mounting holes. Attach the bulkhead to the cap with #6 machine screws, split washers, and nuts, making sure to connect the wire with the #6 ring terminal to one of them, on the inside of the cap.



Attach two 3/16″ eyebolts on opposite sides of the tube 1/2″ below where the slip cap would end when the tube is fully inserted into the cap, then drill two 1/8″ holes 1/2″ below the eyebolt holes.

Drill two 1/8″ holes 5-1/2″ below the top 1/8″ holes. Drill two more 1/8″ holes 4-1/2″ below the second set. Drill two more 1/8″ holes 3-1/2″ below the third set, and attach two 3/16″ eyebolts in the tube about 1/2″ below the fourth holes.

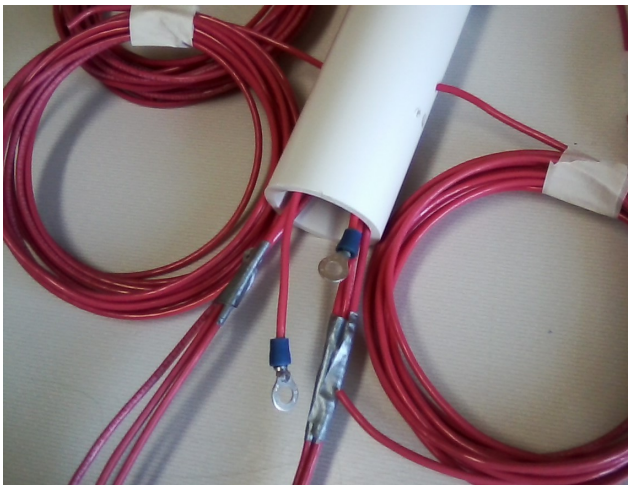
DIY, continued

Four-band Fan Dipole Antenna

From the stranded 14 AWG wire cut two of the wires 66´ each, two of the wires 34´ each, two of the wires 19´ each, and two of them 11´ each.

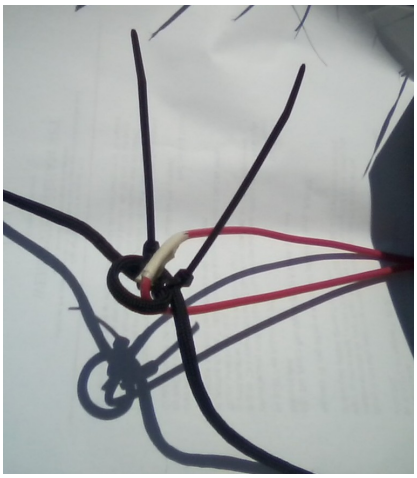
Thread each 66´ wire through one of the first (top) 1/4″ eyebolts, then into the 1/8″ hole just below it, and down into the tube, to stick out about six inches below the bottom. Once you thread these wires through the tube, attach a piece of masking tape to the end of each wire sticking out the bottom, and mark which side it's on. Thread each 34´ wire through the second drilled hole, each 19´ wire through the third drilled hole, and each 11´ wire through the fourth drilled hole on the same side as the others. Repeat this on the other side.

Crimp or solder a #8 ring terminal on the end of each of the eight wires sticking out the bottom of the tube. Secure all four wire ring terminals of one side of the tube, along with one of the ring terminals from the bulkhead, to the bottom eyebolt on the same side inside the tube, then repeat on the other side. This step can be a royal pain, due mostly to the narrowness of the tube.



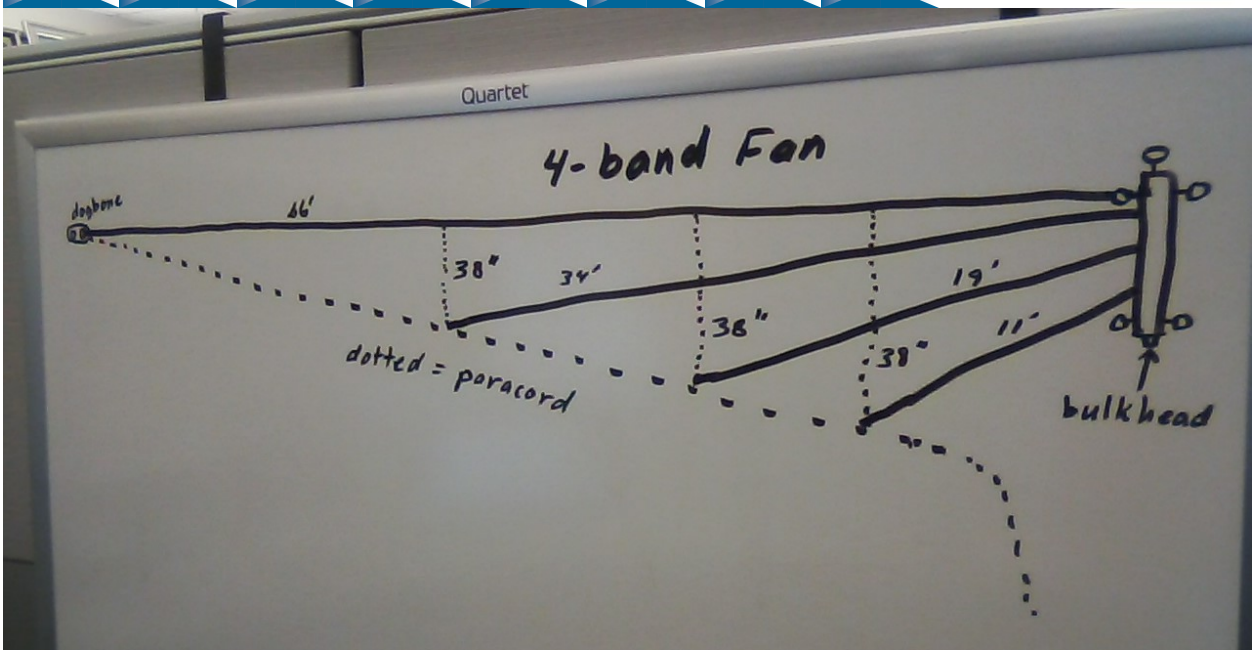
Tie-wrap each 66´ wire onto itself around its eyebolt using two 15″ zip-ties each, to provide a secure strain relief. Slip the other end of each of the 66´ wires through two end holes of a dogbone insulator, such that the length from the eyebolt to the dogbone is 58´ 6″, then wrap the remaining wire onto itself, but do not cut any of the wire, to allow for tuning. Repeat with the 34´ wires, to 30´ 11″. Repeat with the 19´ wires, to 15´ 8″. Repeat with the 11´ wires, to 7´ 10″.

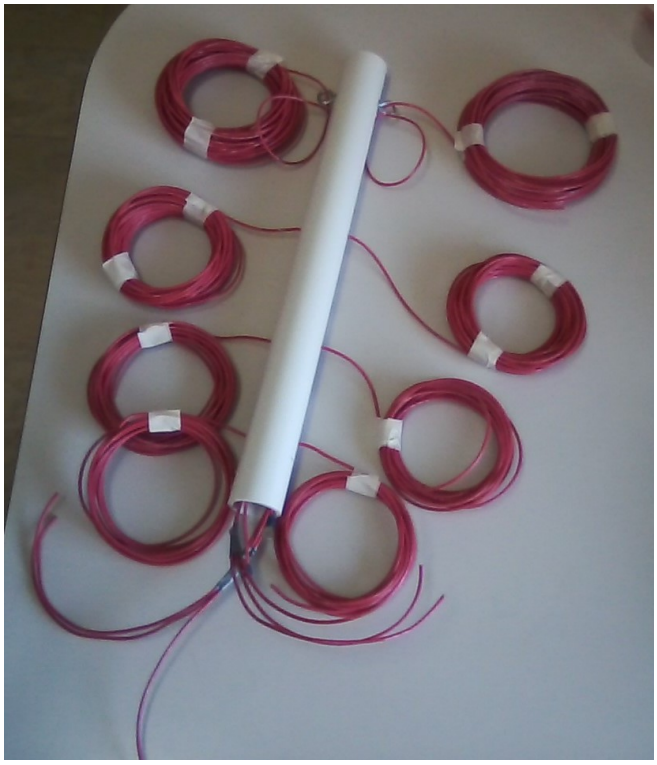
Lay out one side of the antenna on the ground to work on it as if it was up in the air, keeping the 66´ wire tightly straight. Tie a 75´ length of paracord to the dogbone, and lay it down at an angle back to below the balun. Secure the free end of the 34´ wire to this 75´ paracord 38″ below the 66´ wire. Secure the free end of the 19´ wire to the 75´ paracord 38″ below the 34´ wire. Secure the 11´ wire to the 75´ paracord 38″ below the 19´ wire. To maintain distances between wires, tie paracord segments between each wire end and the wires above it. As you can see, I looped the 75´ paracord around each looped wire end, then prevented the loop from slipping by applying a couple of 4″ zip-ties to it. Repeat this on the other side.



DIY, continued

Four-band Fan Dipole Antenna

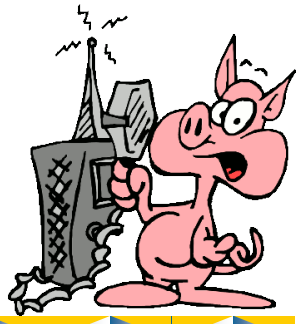




Attach a reliable antenna analyzer to the SO-239 connector by a reasonably long (25 to 50 feet) feedline. For each band, shorten or lengthen each wire to obtain an SWR of 1.7 or lower throughout the intended bands, but remember that close is good enough, or you might find yourself spending all night trying to fine-tune your antenna.

The design for this fan dipole is such that the top (80-meter, or 66´) elements should be as flat (parallel to the earth) as possible and 180 degrees from each other as much as possible when it's mounted. Sloping (one end higher than the other) is fine, as long as the slope angle is no more than about 20 degrees to ground. But any slope or any de-viation from a flat top or symmetrical mount will require some amount of re-tuning. And keep in mind that shortening or lengthening one wire can de-tune the others, so don't be surprised to find yourself repeatedly tuning and re-tuning each element.

Noji Ratzlaff, KNØJI (knØji@arrl.net)



Side of Bacon

A little ham humor

Great ham lies

None of us would ever think of telling a lie, let alone about ham radio. Nope. Still, here are some you can be sure are farthest from the truth:

I only own one radio!

You're 5-9 here

Worked him on the first call

I got this Kenwood for $300

Usually work CW, but have an ear infection

When you're trying to get off the radio:

Gotta take this call

Looks like dinner's ready

You're starting to break up

Gotta see who's at the door

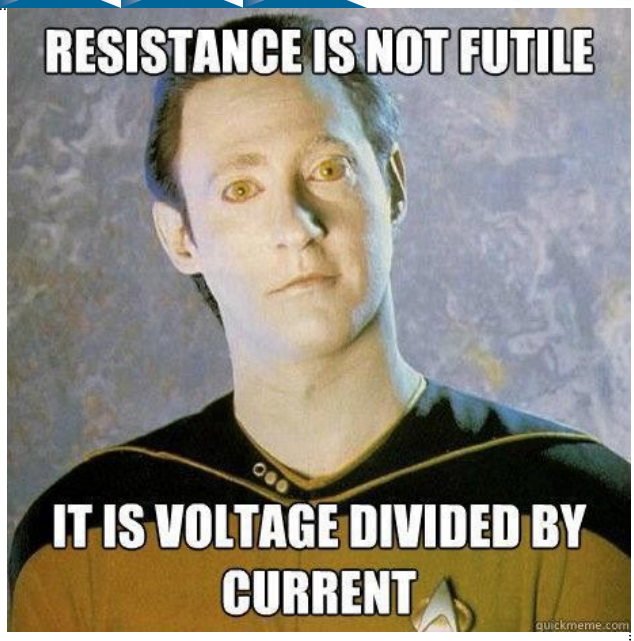
Just destinated

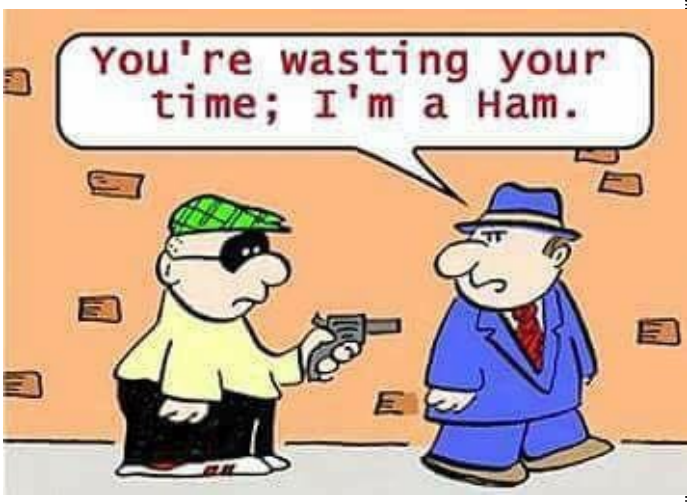
Thought I heard thunder

Gotta get ready for the net

Nature calls

One Used Yaesu FT-101EE Transceiver $350.00
33' of #14 awg Antenna Wire $2.64
Two 1 1/4" Green Ceramic Insulators $1.00
100' of RG-213 Coax Cable..... $37.00
One 8' Copper Clad Ground Rod with Clamp and Strap ... $15.00
Realizing You Don't Need The Internet To Communicate Around The World
PRICELESS!!
When All Else Fails There Is Amateur Radio





Please send your good (or bad) humor material to ***uvarcshack@gmail.com***

For Your Insight

Information you could use

Club meeting format

Here's the usual agenda for club meetings, at the Orem City Council Chamber Room, 56 N State St:

Talk-in frequency on the club repeaters

6:30 pm : Eyeball QSO

socialize / schmooze / trade

put faces with call signs

radio programmers available to help you

6:45 pm : Call the meeting to order

meeting lineup (agenda)

announcements / nets / awards / calendar

7:00 pm : Door prizes

7:15 pm : Discussion / breakout session

discussions usually involve everybody

breakouts split into separate groups

7:50 pm : Dismiss and tear-down

8:00 pm : *Club QSY* to Lucy's Pizzeria

Something you'd like to see at the meetings?

Monthly meeting help

We're grateful for the volunteers who help with various tasks that make our club night just that much more friendly and useful to everybody. Monthly we need help with

programming radios

taking photos or videos during the meeting

operating the talk-in radio

setting up tables and chairs

Lynx

Websites for your education and leisure

For the New Ham Radio Operator

Ham Radio Equipment and DIY

Ham Radio Nets

DX Summit and DX Maps

The Myth of EMP

Recommended Study Method (for exams)

Give us your input at uvarcshack@gmail.com

Questions of the Month

Test your knowledge (answers next page)

G7C11 : What is meant by the term "software defined radio" (SDR)?

A. A radio in which most major signal processing functions are performed by software

B. A radio that provides computer interface for automatic logging of band and frequency

C. A radio that uses crystal filters designed using software

D. A computer model that can simulate performance of a radio to aid in the design process

E1EØ3 : What is a Volunteer Examiner Coordinator?

A. A person who has volunteered to administer amateur operator license examinations

B. A person who has volunteered to prepare amateur operator license examinations

C. An organization that has entered into an agreement with the FCC to coordinate amateur operator license examinations

D. The person who has entered into an agreement with the FCC to be the VE session manager

Calendar

What's happening
(times are Mountain Time)

Utah County Ham Exam Sessions

BYU J. Reuben Clark Law School building

Sign up at HamStudy.org/sessions

Sat Oct 14, 2:30 to 5:00 pm
Thu Oct 19, 7:00 to 8:45 pm
Wed Nov 15, 7:00 to 8:45 pm
Sat Nov 18, 2:30 to 5:00 pm
Sat Dec 16, 2:30 to 5:00 pm
Wed Dec 20, 7:00 to 8:45 pm
Wed Jan 17, 7:00 to 8:45 pm
Sat Jan 20, 2:30 to 5:00 pm

Provo One-day Technician Courses

Third Saturday Monthly at 8:00 am

2018 Orem Ham Radio Courses

Technician : Jan 23, 30, Feb 6, 13
Extra : Mar 13, 20, 27, Apr 3, 10
Technician : May 22, 29, June 5, 12
General : July 31, Aug 7, 14, 21
Technician : Sept 18, 25, Oct 2, 9

Club Meeting Calendar (6:30 pm)

Orem Council Chambers, 56 N State St

October 5	November 2
* December 7	January 4
February 1	March 1
April 5	May 3

** Christmas potluck actually at 93 N 400 E*

Regular Nets

RACES Net, Thu Oct 19 8:00 pm, 147.12
Jackson Hole Net, Mon 8:00 pm, 146.76
UVARC Ladies' Net, Tue 7:00 pm, 146.78
UARC 76'ers, Wed 7:00 pm, 146.76
UVARC Youth Net, Thu 6:30 pm, 146.78
UVARC New Ham Net, Thu 7:00 pm, 146.78
CERT Net, 2nd & 4th Thu 8:00 pm, 146.78
Utah County 6 meters, Fri 8:00 pm, 50.14
6-Pack Net, Fri 9:00 pm, 50.15
Family History Net, Sat 8:00 pm, 146.78
See a larger list of nets at noji.com/nets

Upcoming Contests

CQP (California QSO Party)

Noon to 6 pm Sat Oct 7

AZQP (Arizona QSO Party)

Sat Oct 14
Also that weekend: Pennsylvania

NYQP (New York QSO Party)

Sat Oct 21
Also that weekend: South Dakota, Illinois

CQ World Wide DX Contest *

6 pm Fri Oct 27 to 6 pm Sat Oct 28

** This is one of the four big ones annually*

Answers to the Questions of the Month

G7C11 : **A** (A radio in which most major signal processing functions are performed by soft-ware)

E1EØ3 : **C** (An organization that has entered into an agreement with the FCC to coordinate amateur operator license examinations)

Utah Valley Amateur Radio Club

Orem, Utah, USA

K7UVA
Phone/Text: 801-368-1865
Email: k7uva@arrl.net
Repeaters: 146.780–, 100.0
448.200-, 100.0 224.560-, 100.0
Newsletter input?
Email uvarcshack@gmail.com
Need help?
Email uvarcelmer@gmail.com

Amateur Radio for Utah Valley

We're on the web!
uvarc.club

We are the *Utah Valley Amateur Radio Club*, a 501(c)(3) non-profit (EIN 81-360-6416) group that was organized in an obscure Orem fire station on 02-05-2016 to provide hams in Utah County and the surrounding areas a way to gather and discuss all things ham. Our primary purposes are to help new hams in their new-found adventures, and to give more experienced hams a reason to share their wealth of knowledge and wisdom in a friendly atmosphere of fellowship. We're in no way answerable to the ARRL, UARC, the 76'ers, UCARES, RACES, the SCATeam, Daughters of Utah Pioneers, the Secret Service, or any other organization, although many of our members might also be members of the same.

This alleged newsletter is published every so often by the Utah Valley Amateur Radio Club, and its purpose is to convey the tone and temperament of the club, to inform and entertain its members, and to entice the rest. To join, go to www.facebook.com/groups/uvarc/ and request membership. For more information about our club or about amateur (ham) radio in general, please email or text or call us.

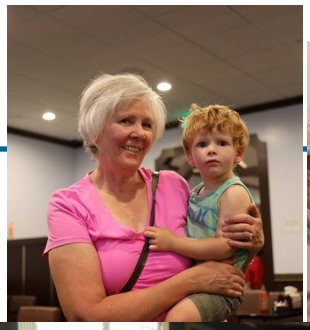
Our fearless leadership

Presidency

President..... Noji Ratzlaff
Vice President..... Chad Buttars
Secretary.....Caryn Alarcon
Activities..... Jeff McGrath
Technology.....Trevor Holyoak

Board of Directors

Richard Bateman, KD7BBC
Carl Pockrus, WE7OMG
Aubrey Gum, K7GUM
Jody Dollar, K7BUX
Jeremy Giovannoni, K7TEH
Brad Kirk, AF7FP
Alma Perry, W1ZGY

Club Sponsor

Heath Stevenson
Orem City Emergency Manager